AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		3

2. AMENDMENT/MODIFICAITON NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicble)
0001	02/07/02		

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE
U. S. ARMY CORPS OF ENGINEERS GALVESTON DISTRICT OFFICE P. O. BOX 1229 GALVESTON, TEXAS 77553-1229	EC	U.S. ARMY CORPS OF ENGINEERS GALVESTON DISTRICT OFFICE P. O. BOX 1229 GALVESTON, TEXAS 77553-1229	CT

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICIATION NO.
	✘	DACW64-02-B-0012
		9B. DATED (SEE ITEM 11) 01/17/02
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 11)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPIRATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return ———— copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Houston-Galveston Navigation Channels, Texas, (45-Foot Project), Redfish Island Restoration

(See Attached)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED

1. The specifications and drawings for Invitation No. DACW64-02-B-0012, Redfish Island Restoration, (45-Foot Project), Houston-Galveston Navigation Channels, Texas, advertised 17 January 2002, and for which bids are to be opened on 20 February 2002, are hereby modified as follows:

(a) Specifications.

(1) Page 00800-2, Paragraph 2(a). - At the end of the second line, change "borings" to "probings."

(2) SECTION 02384, STONE SHORE PROTECTION. Delete this Section and substitute the enclosed new SECTION 02384 entitled STONE SHORE PROTECTION therefor.

(3) SECTION 02484, SHELL EXCAVATION. Delete this Section and substitute the enclosed new SECTION 02484 entitled SHELL EXCAVATION therefor.

(b) Drawings.

(1) Drawings Nos. C-2 and C-6. - The following new NOTE 4 shall be added to these Drawings:

> "4. THE 10" KIVA CONSTRUCTION & ENGINEERING, INC. PIPELINE IS TO BE REMOVED BY THE PIPELINE OWNER FROM UNDER THE HOUSTON SHIP CHANNEL TO A POINT 4,000 FEET SOUTHWEST OF THE CENTERLINE OF THE HOUSTON SHIP CHANNEL PRIOR TO CONSTRUCTION OF THE REDFISH ISLAND."

(2) Drawing No. C-5. - In the area designated "BREAKWATER W/RIPRAP," change "STATION 27+56.14 TO 37+50.00" to "STATION 27+66.14 TO 37+50.00." Also, below this area, in the center of the Drawing, change "TRANSITION FROM TYPICAL MAIN ISLAND TO TYPICAL BREAKWATER FROM STA. 27+00 TO STA. 27+56.14" to "TRANSITION FROM TYPICAL MAIN ISLAND TO TYPICAL BREAKWATER FROM STA. 27+56.14 TO STA. 27+66.14."

(3) Drawing No. C-6. - The following new NOTE 5 shall be added to this Drawing:

> "5. THE CONTRACTOR MAY EXCAVATE A FLOATATION CHANNEL ON THE HOUSTON SHIP CHANNEL SIDE OF THE ISLAND BETWEEN REDFISH ISLAND STATIONS 6+45.50 AND 30+00 BUT THIS SHALL BE BACKFILLED WITH THE REMOVED MATERIALS TO THE ORIGINAL BAY BOTTOM ELEVATION AS SOON AS PRACTICABLE AND PRIOR TO DEMOBILIZATION."

(4) Drawing No. C-12. - The enclosed FIGURE 1 shall be added to this Drawing No. 12 and become part of this Invitation.

2. This amendment shall be attached to, and become a part of, the specifications.

3 encls
1. SECTION 02384
2. SECTION 02484
3. FIGURE 1

SECTION TABLE OF CONTENTS

SITE WORK

SECTION 02384 - STONE SHORE PROTECTION

SECTION 02384 - STONE SHORE PROTECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK. The work covered in this Section consists of furnishing plant, labor, equipment, and materials, and performing the operations to install quarry run stone fill for the interior core for the Bird Area, Neck, Main Island, and Breakwater; riprap stone shore protection on the Bird Area, Neck, Main Island, and Breakwater; and cereal stone for cover on the Bird Area and on the beach on the Channel side of the Island for partial restoration of Redfish Island as shown, directed, and as specified herein. The Bird Area is defined as the western end of the Island from Stations 0+89.61 to 6+45.50. The Main Island includes the Neck from Stations 6+45.50 to 7+45.50 and the Main Island from Stations 7+45.50 to 27+56.14. The Breakwater includes Stations 27+56.14 to 37+50 and the Breakwater Option includes Stations 37+50 to 40+22.38

1.1.1 Access to Work Site. Access to the work site may be obtained only by waterborne transport by way of the Houston Ship Channel.

1.2 REFERENCES. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM) Publications.

C 127-99	Specific Gravity and Absorption of Coarse Aggregate
C 131-96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C 136-96	Sieve Analysis of Fine and Coarse Aggregates
C 295-98	Petrographic Examination of Aggregate for Concrete
C 535-96 (E1-1996)	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C 1141-95	Substitute Ocean Water

D 75-97	Standard Practice for Sampling Aggregates.
D 5313-02	Evaluation of Durability of Stone for Erosion Control Under Wetting and Drying Conditions.

1.3 STORAGE OF CONSTRUCTION MATERIALS. Construction materials received with certified weights which shall be unloaded from the barges and which cannot be used immediately for construction shall be stored in an acceptable storage area. The storage area shall be reasonably near the job site and shall be approved. The storage area shall be a relatively smooth area so that the stored material may later be recovered free from dirt or other foreign materials.

1.4 SUBMITTALS. Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with the SECTION entitled SUBMITTAL PROCEDURES.

1.4.1 SD-01 Data.

1.4.1.1 Contractor Quality Control Plan: GA. The Contractor shall submit a Quality Control Plan prior to construction detailing the requirements specified in the Paragraph CONTRACTOR QUALITY CONTROL, below and in the SECTION: CONTRACTOR QUALITY CONTROL.

1.4.2 SD-04 Drawings.

1.4.2.1 Equipment Layout: GA. The Contractor shall submit layout drawings of the floating equipment showing access locations and sizes prior to construction.

1.4.3 SD-07 Schedules.

1.4.3.1 Equipment List: FIO. A list of the major pieces of equipment that are to be used for performing the work shall be submitted prior to mobilization.

1.4.3.2 Work Plan and Schedule: GA. The Contractor shall submit a work plan and schedule that denotes the equipment, loading and unloading, transportation, placement methods, and sequences used for riprap stone, quarry run stone, and cereal stone placement. The plan and schedule shall be submitted prior to shipment of the material and the schedule shall be updated monthly to reflect the work completed and scheduled work remaining. The Contractor shall not commence work until the plan and schedule have been reviewed, approved, and incorporated into the overall construction and progress schedule.

1.4.4 SD-13 Certificates.

1.4.4.1 Materials: GA. Supplier's Certificates that demonstrate compliance with the quality and gradation of riprap stone, quarry run stone, and cereal stone.

1.4.5 SD-14 Samples.

1.4.5.1 Materials: FIO. Source documentation for riprap stone, quarry run stone, and cereal stone shall be submitted a minimum of 15 days before the material is required in the work.

1.5 UTILITIES ACROSS THE SITE. A submerged pipeline that crosses the site will be partially removed for 4,000 feet prior to construction by the pipeline owner. In addition, several avoidance areas are present in the area. With the exception of M14, which is described as a block of concrete or conglomerate, the areas listed below are to be avoided. The locations of the pipeline and avoidance areas are as shown and specified below.

Approximate Station	Description	Owner
21+60 (HSC Sta. 67+060)	One 10-inch pipeline	Kiva Construction Engineering, Inc. Joseph McDermott Phone: (409) 252-3211 Permit D10809

Avoidance Area	Easting	Northing	Avoidance Radius (ft)
M6	3,309,508	633,226	96
M7	3,309,652	633,340	97
M8	3,308,560	634,313	66
M9	3,308,502	634,526	78
M10	3,308,552	634,766	62
M11	3,308,098	634,801	106
M12	3,306,254	634,521	70
M13	3,307,511	635,355	60
M14	3,306,322	635,401	NA
M15	3,307,077	635,909	47
M16	3,307,209	636,000	50
M20	3,309,000	634,836	111
M21	3,308,862	635,385	79
M22	3,308,392	636,003	68

EVERY EFFORT HAS BEEN MADE TO GIVE ALL PERTINENT DETAILS ON THE LOCATION OF THE PIPELINE AND AVOIDANCE AREAS. THE DATA FURNISHED ON THE PLANS ARE BELIEVED TO BE SUBSTANTIALLY CORRECT. HOWEVER, THE EXACT LOCATIONS MAY VARY FROM THAT SHOWN; THEREFORE, THE CONTRACTOR SHALL COOPERATE WITH THE RESPECTIVE OWNER TO ESTABLISH THE ACTUAL POSITION OF THE PIPELINE. THE U.S. ARMY CORPS

OF ENGINEERS PERMITS OF THE RESPECTIVE PIPELINE AND PREVIOUS SURVEYS ARE AVAILABLE IN THE BAY AREA OFFICE.

THE FOLLOWING IS FURNISHED FOR INFORMATION TO VERIFY PIPELINE OWNERSHIPS:

Lone Star Notification Service (**NOTE: Use on Houston Ship Channel Projects Only**) (Texas-One-Call) 1-713-223-4567 or 1-800-669-8344.

Texas Excavation Safety System
(Dig-Tess) 1-800-344-8377.

1.6 MEASUREMENT.

1.6.1 General. Measurement paragraphs only provide the means for measuring the stone for pay purposes and are not a representation of accessibility of the site.

1.6.2 Shore Protection Riprap Stone necessary to complete the acceptance sections shown shall be measured per short tons of 2,000 pounds for payment by the Barge Displacement Method for the Bird Area, Neck, Main Island, Breakwater, and Breakwater Option, as applicable.

1.6.3 Barge Displacement Method. Stone shall be measured in short tons of 2,000 pounds each. Barge displacement measurements will be accepted for determination of the weight of stone placed in the finished section. The barge shall be gaged at a protected location near the site as approved. For this purpose each barge shall be fitted by the Contractor, at its expense, with gages graduated either to inches or tenths of a foot, located either inside or outside of the hull, as the Contracting Officer may direct, and attached solidly to the hull itself. These gages shall be located two (2) near each end of the vessel on opposite sides and two (2) additional gages amidship. If located inside the hull, provision shall be made for the free passage of the outside water to a transparent tube placed, or capable of being placed, in contact with the gage. If located outside upon wooden hulls, the gages shall be protected by solid fenders or recessed into the planking, or if upon steel hulls, the gage marks may be placed directly on the plates and identified by punch marks. Gages shall be placed so that their zeros are below water when the vessel is in its normal trim, light, and free from water. In lieu of the gages in the interior of the barge, the Contractor may provide an equal number of wells for determining the amount of the load. These wells shall be located as specified for interior gages and shall be constructed and approved.

1.6.3.1 Fore and Aft Displacements, due to load, shall not differ more than 10 percent from their mean for the determination of tonnage of each barge load of stone ready for placement. In determining the tonnage of cargo, the change in gage readings due to discharge of the cargo will be used.

1.6.3.2 Barge Displacement Tables. The barges shall be fitted for the work sufficiently ahead of the time fixed for commencement to enable the Contracting Officer to measure them accurately before work is commenced. The Contractor will be required at its expense to place the barges in dry dock for measurement and furnish materials and facilities for taking the necessary measurements for preparing barge displacement tables. The Contractor shall pump the water from barges when so requested but no pumping of a barge shall be done between the time it is gaged loaded and light to determine the amount of a barge load.

1.6.3.3 Repairs or Additions made to the barges during the progress of the work shall be promptly reported to the Contracting Officer. During the progress of the work when the Contracting Officer deems it advisable or necessary, each barge shall be re-measured at the expense of the Contractor and under the supervision of the Contracting Officer. No barge shall be used which is not in a seaworthy condition or which leaks excessively. The barges used shall be so constructed so that they do not bend or warp when loaded and make the gages unreliable. Each barge load shall contain only one (1) class of stone.

1.6.3.4 Load. To determine the load, measurements shall be taken immediately before a barge starts for its point of unloading and immediately after it returns from that point. The gages will be read by the Contracting Officer and the Contractor is invited to be present when the readings are taken. Disagreements on the part of the Contractor as to the weight of stone will be reported to the Contracting Officer in writing within 10 days of their occurrence. Disputes will be handled in accordance with the CONTRACT CLAUSE entitled DISPUTES. To ensure the use of the proper weight of surrounding water in calculating the weight of stone from the barge gage readings, hydrometer measurements will be made alongside each barge when it is gaged loaded and light. Other methods of measurement may be used when approved.

1.6.4 Quarry Run Stone necessary to complete the acceptance sections shown shall be measured per short ton of 2,000 pounds. Measurement shall be made using the methods specified in the Subparagraph: Barge Displacement Method above.

1.6.5 Cereal Stone necessary to complete the acceptance sections shown shall be measured per short ton of 2,000 pounds. Measurement shall be made using the methods specified in the Subparagraph: Barge Displacement Method above. Tonnage on the Bid Schedule reflects an assumed 25 percent infiltration into the riprap or quarry run stones.

1.6.6 Excavation and Disposal of Material. Slope preparation or access and floatation channel dredging and its related disposal for the placement of stone shall not be measured for payment

1.6.7 Sampling and Testing shall not be measured for payment.

1.7 PAYMENT.

1.7.1 Stone.

1.7.1.1 Shore Protection Riprap Stone. Payment for furnishing and placing the riprap stone shore protection will be made at the applicable contract unit prices per short ton for “Riprap Stone - Bird Area (Sta. 0+89.61 to 6+45.50),” “Riprap Stone - Neck (Sta. 6+45.50 to 7+45.50),” “Riprap Stone - Main Island (Sta. 7+45.50 to 27+56.14),” “Riprap Stone - Breakwater (Sta. 27+56.14 to 31+50),” and “Riprap Stone - Breakwater (Sta. 31+50 to 37+50),” which prices shall include the costs of materials, labor, and equipment required to complete the work specified herein and as shown. Stone placed outside the lines, grades, and tolerances will be measured in-place and the deductions will be based on the factor of 1.5 tons per cubic yard volume, or the applicable bid price for the misplaced stone.

1.7.1.2 Quarry Run Stone. Payment for furnishing and placing the quarry run stone island fill will be made at the applicable contract unit price per short ton of acceptable "Quarry Run Stone (Sta. 0+89.61 to 37+50)" placed. Prices shall include the costs of materials, labor, and equipment required to complete the work specified herein and as shown. Stone placed outside the lines, grades, and tolerances will be measured in-place and the deductions will be based on the factor of 1.5 tons per cubic yard volume.

1.7.1.3 Cereal Stone. Payment for furnishing and placing the cereal stone will be made at the applicable contract unit price per short ton of acceptable "Cereal Stone - Beach (Sta. 0+89.61 to 27+56.14)" and "Cereal Stone - Bird Area Crown (Sta. 0+89.61 to 6+45.50)," which prices shall include the costs of materials, labor, and equipment required to complete the work specified herein and as shown. Stone placed outside the lines, grades, and tolerances will be measured in-place and the deductions will be based on the factor of 1.5 tons per cubic yard volume.

1.7.2 Option. If the OPTION is authorized, the riprap stone, riprap displacement stone, and quarry run stone breakwater payments will be made at the following applicable contract prices per short ton of 2,000 pounds each.

1.7.2.1 Riprap Stone. Payment for furnishing and placing the riprap stone in the Breakwater Option will be made at the applicable contract unit price per short ton for "Riprap Stone – Breakwater Option (Sta. 37+50 to 40+22.38)," and "Riprap Displacement Stone – Breakwater Option (Sta. 37+50 to 40+22.38)." Both prices shall include the costs of materials, labor, and equipment required to complete the work specified herein and as shown. Stone placed outside the lines, grades, and tolerances will be measured in-place and the deductions will be based on the factor of 1.5 tons per cubic yard volume.

1.7.2.2 Quarry Run Stone Breakwater. Payment for the quarry run stone in the Breakwater Option will be made at the applicable contract unit price per short ton of acceptable "Quarry Run Stone - Breakwater (Sta. 37+50 to 40+22.38)." Prices shall

include the costs of materials, labor, and equipment required to complete the work specified herein and as shown. Stone placed outside the lines, grades, and tolerances will be measured in-place and the deductions will be based on the factor of 1.5 tons per cubic yard volume.

1.7.3 Sampling and Testing. The costs for sampling and testing shall be included in the applicable contract unit prices for Riprap Stone, Quarry Run Stone, and Cereal Stone.

PART 2 - PRODUCTS

2.1 MATERIALS.

2.1.1 General. The Contractor shall make arrangements, pay royalties, and secure the permits for procurement, furnishing, and transporting the stone. The Contractor shall vary the quarrying, processing, loading, and placing operations to produce the sizes and quality of stone specified. If the stone furnished by the Contractor does not fully meet the requirements as specified herein, the Contractor shall furnish other stone meeting these requirements at no additional cost to the Government.

2.1.2 Stone for use in this work shall be durable natural stone as approved. The sources where the Contractor proposes to obtain the material shall be selected well in advance of the time when the material will be required in the work.

2.2 SOURCES.

2.2.1 Stone Authorization. Before stone is produced from a source for completion of the work in this contract, the source of stone shall be approved. Approval of a stone source shall not be construed as a waiver of the right of the Government to require the Contractor to furnish stone that complies as specified herein. Materials produced from localized areas, zones, or strata will be rejected when these materials do not comply as specified herein.

2.2.2 Stone Source Documentation. Authorization of a proposed stone source will be based on test results or service records. Current U. S. Army Corps of Engineers test results will be required as specified in the Paragraph: QUALITY COMPLIANCE TESTING, below. The Contracting Officer may elect to use either past Corps of Engineers test results or a combination of service records along with Corps approved test results from other agencies or private laboratories. A service record is considered acceptable if stone from the proposed source has remained sound and functional after at least 10 years of exposure on a project similar to the one to be constructed under this contract.

2.3 QUALITY COMPLIANCE TESTING.

2.3.1 Samples. If required, samples for U.S. Army Corps of Engineers testing shall be submitted a minimum of 10 days in advance of the time when the stone shall be required in the work. Stone from a proposed source or sources shall be tested by the Contractor for quality compliance.

2.4 STONE QUALITY.

2.4.1 Riprap and Quarry Run Stone shall meet the following test requirements:

Test	Test Method	Requirements
Specific Gravity (Bulk SSD)	ASTM C 127	2.60 Minimum
Absorption	ASTM C 127	3.0% Maximum
Wetting and Drying	ASTM D 5313[(1)]	No Fracturing [(2)]
Abrasion Loss	ASTM C 131 ASTM D 535	40% Maximum Loss [(3)]

In addition to the above tests, the stone shall be subjected to a Petrographic and X-ray Diffraction analysis in accordance with ASTM C 295[(4)]. The stone shall not contain expansive clays.

[(1)] The testing procedure used in ASTM D 5313 shall include testing of each sample in potable and in salt water prepared in accordance with ASTM C 1141.

[(2)] Weakening and loss of individual surface particles is permissible unless bonding of the surface grains softens and causes general disintegration of the surface material.

[(3)] Stone that has a loss greater than the specified limit will be accepted if the Contractor demonstrates that the stone has a satisfactory service record That exceeds 10 years.

[(4)] Test procedure for Petrographic and X-ray Diffraction is performed according to ASTM C 295, except for the following:

(i) A colored microscope photograph shall be made of each stone type, whether igneous, sedimentary, or metamorphic, and the individual minerals within the stone type shall be identified by labels and arrows upon the photograph.

(ii) A very detailed macroscopic and microscopic description shall be made of the stone, to include the entire mineral constituents, individual sizes, their approximate percentages and mineralogical histories. A description of stone hardness, texture, weathering, and durability factors shall also be discussed. Pictures shall be included of the source wall.within the quarry to show layering and lithology.

(iii) A written summary of the suitability of stone for use as armor or fill stone based on the Petrographic and X-ray tests and the abrasion loss (L.A. Rattler) shall be presented in the final laboratory report on stone quality.

2.4.2 Cereal Stone shall meet the following test requirements:

Test	Test Method	Requirements
Specific Gravity (Bulk SSD)	ASTM C 127	2.60 Minimum
Abrasion Loss	ASTM C 131 ASTM D 535	40% Maximum Loss [3]

2.5 STONE ACCEPTANCE. Prior to placement, stone shall be subject to approval. Approval of any stone shall not constitute acceptance of all stone from a source. Approved stone shall be: of the same lithology as the original stone from which test results or service records were taken as a basis for authorization of the source, sound, durable, hard; and free from laminations, weak cleavages, undesirable weathering, blasting or handling-induced fractures, or fracture zones that subtend more than 1/3 of the total circumference of the stone along the plane of fracturing. The stone shall be of good character so that it shall not disintegrate from the action of air, water, or the conditions of handling and placing; shall be clean and free from earth, clay, refuse, or adherent coatings. The riprap stone and quarry run stone shall be angular quarried material with a shape that ensures interlocking with adjacent stone and the greatest dimension of each piece shall not be greater than three (3) times the least dimension.

2.6 REJECTED STONE. Stone of unsuitable quality or size distribution specified will be rejected and shall be promptly removed from the project at no expense to the Government. Portions of the work covered herein that contain rejected stone will be considered incomplete.

2.7 PERIODIC TESTING. Stone taken from a particular source shall be tested and certified in terms of gradation and specific gravity for each 8,000 tons of stone type shipped. A copy of each certification shall be submitted 5 days before placement of that stone. Gradation testing shall be in accordance with ASTM C 136; however, due to the riprap stone size, the riprap stone shall be individually weighed and measured. Specific gravity testing shall be in accordance with the procedures specified

in the Paragraph: STONE QUALITY above. Testing shall commence prior to shipment of the material. Sampling and gradation tests performed by the Contractor shall be as specified and the Contracting Officer shall be given 7 days notice to witness the tests. Test results shall be submitted upon completion of each test. Additional sampling and testing of a load of material delivered to the project site shall be at the Contracting Officer's discretion and can be randomly chosen for up to a maximum of five (5) tests. The Government reserves the right to perform the tests. Costs for sampling and testing shall be at the Contractor's expense.

2.8 STONE SIZE.

RIPRAP STONE SHORE PROTECTION AND BREAKWATER		
Design Stone Dimensions (inches)	Percent of Stone by Weight Less than Design Stone Size (%)	Weight of Design Stone Size (pounds)
8.5	5	<55
12-17	15	163-450
16-19	50	407-610
20-26	100	814-1,628

QUARRY RUN STONE		
Design Stone Dimensions (inches)	Percent of Stone by Weight Less than Design Stone Size (%)	Weight of Design Stone Size (pounds)
1.5	5	0.32
2-3	15	0.75-2.6
5-6	50	12-21
9-12	85	70-165
12	100	165

CEREAL STONE	
Design Stone Dimensions (inches)	Percent of Stone by Weight Less than Design Stone Size (%)
3/8	5
0.5-1	15
1.25-1.5	50
2-2.5	85
3	100

PART 3 - EXECUTION

3.1 PLACEMENT.

3.1.1 General. Except as otherwise specified, the limits of the riprap stone, quarry run stone, and cereal stone in place shall follow the indicated lines and grades. Templates shall be placed at adequate intervals, as directed, to accurately delineate the surfaces of the Island. The work shall be finished smooth. Before commencement of placing operations, the Contractor shall submit the intended method of placement for approval.

3.1.2 Slope Preparation. Slopes of the Island to receive riprap protection shall be shaped and prepared as shown. The excess material shall be placed within the template or on top of the crown. Material excavated for the toe or keyway for riprap stone shall be placed on top of the Island crown and be uniformly spread over the surface to fill the voids of the quarry run stone.

3.1.3 Construction Load on Island. The Contractor shall exercise extreme care if heavy construction loads are placed on the Island and shall repair damage caused by its activities, direct or indirect, at no cost to the Government.

3.1.4 Tolerances. Stonework shall be carried to the lines and grades shown and to the tolerances as specified herein. Final surfaces of the finished course shall be reasonably even, uniform, and shall follow the indicated lines and grades without continuous under- or overbuilding. Deviations in elevations of the quarry run stone and cereal stone on the beach areas shall be no less than -0.0 foot and no greater than +6 inches. Deviations from the dimensions of riprap stone shall be not greater than +8.5 inches and less than -0.0 foot. Deviations from the bottom toe elevation of the riprap shown shall not be greater than +0.0 foot and -6 inches. The surface slope of the riprap and quarry run stone shall not deviate greater than $\pm$8 percent from the slope shown. Layer thickness deviations from that shown for cereal stone on the Bird Area crown shall be no less than -0.0 foot and no greater than +2 inches. Crown alignments shall be within $\pm$5 feet of the proposed alignment. Crown widths shall be within $\pm$2 feet of the proposed widths.

3.1.5 Misplaced Material. Material that escapes or is lost while loading, transporting, or placing or that is deposited other than in the area shown or approved in writing shall be removed and re-deposited where directed at Contractor's expense.

3.1.6 Misplaced Equipment. If the Contractor, during progress of the work loses, dumps, throws overboard, sinks, or misplaces material, plant, machinery or appurtenances that may be dangerous to or interfere with uses of the Waterway and cause pollution of the waters, the Contracting Officer shall be notified immediately. The Contracting Officer shall be given the description and location of these obstructions and removal by the Contractor will be as directed. If the Contractor refuses, neglects or delays compliance with the above requirements, these obstructions may be removed by

the Government and the cost of removal may be deducted from the money due or to become due to the Contractor.

3.1.7 Placement.

3.1.7.1 Stone. The stone shall be placed so that a reasonably well-graded mass is produced with a minimum practicable percentage of voids and shall be constructed to the lines and grades shown. Stone shall be placed to its full course thickness in one (1) continuous operation. Riprap and quarry run stone shall be allowed to fall no more than 5 feet from the bottom of the clam or other bucket and top surface of the stone work for work within 5 feet of the water level. For underwater work, where the work surface is more than 5 feet below the water level, the maximum drop shall be 5 feet. Allowable placement distances for the cereal stone shall be 3 feet. An otherwise allowable height using the Contractor's approved placement method will not be permitted if it is shown to cause segregation of stone sizes or breakage of individual stones. In these cases, allowable drop heights shall be developed on-site between the Contracting Officer and the Contractor based on actual performance. Placement of the initial loads of the cereal stone shall be accomplished so that the stone enters the surface voids of the riprap or quarry run stone. The Contractor shall maintain the stone until accepted and if material is displaced or the surface damaged, replacement shall be made to the indicated lines and grades, at the Contractor's expense.

3.1.7.2 Breakwater Displacement. Riprap stone shall be placed over poor foundation areas prior to the quarry run stone to serve as a firm foundation for the Breakwater Option to be constructed. This construction method will occur if the Breakwater Option is authorized.

3.2 CONTRACTOR QUALITY CONTROL.

3.2.1 Compliance Inspection. The Contractor shall inspect, sample, and test for compliance with the contract requirements and record the inspection of operations. A copy of the records of inspection, as well as the records of corrective action taken, will be submitted as directed. The Contractor, at its expense, shall perform inspection in accordance with the following schedule:

(1)	Stone -	Quality - One (1) set of quality tests per source provided
		Specific Gravity - One (1) specific gravity test on each 8,000 tons per stone type.
		Gradation - One (1) gradation to be performed on each 8,000 tons per stone type.
		Placement - Continuous check of placement to ensure proper size and compliance with grade lines shown.

(2) Slopes Lines and grades, disposition of material.

3.2.2 Additional Tests. The Government will, as it deems necessary, make check tests at its own expense from representative samples of the stone being furnished for this contract.

3.2.3 Surveys. Quality Control Surveys of the quarry run stone, riprap stone shore protection, cereal stone, and bay bottom prior to construction shall be performed by the Contractor. Cross sections shall be taken so that the lines, grades, and thicknesses of each stone type can be presented and checked after each stone type is placed and prior to placement of another type of stone at that section. The construction surveys shall encompass the previous day's construction to the maximum extent practicable. The results shall be presented in both graphical and digital formats. The digital shall be ASCII X, Y, and Z in the project datum. The graphical format shall consist of cross sections at scales not smaller than 1-inch equals 50 feet Horizontal and 1-inch equals 10 feet Vertical so that each section can be presented on 8-1/2 by 11-inch paper with representative end areas shown. Cross sections before and after the placement of the stone shall be taken at maximum intervals of 50 feet on center with a data density no smaller than one (1) elevation shot every 10 linear feet on line. Additional elevation shots shall be taken at the slope crowns and at abrupt changes in grade. Cross sections shall also be performed perpendicular to the crown along the western end of the Bird Area at the same interval and at least one (1) cross section at the end of the breakwater parallel to the baseline. Temporary bench marks and controls established by the Contractor to perform the surveys shall be verified by Real Time Kinematic Global Positioning Systems on a weekly basis, at a minimum. The cross sections shall extend a minimum of 30 feet beyond the slope and stone toe and cover the entire Island crown and breakwater crown as applicable. Preconstruction surveys may be performed by soundings or by conventional methods. If the Bay bottom is surveyed by conventional methods the survey rod shall be fitted with a 6-inch by 6-inch square steel plate weighing 5 pounds. The steel plate is to be advanced through the soft materials under its own weight until firm soils are encountered. Cross sections shall be complete no later than 5 calendar days following completion of the placement of each type of stone. The cross sections shall be submitted within 7 calendar days of data collection. Submittal shall include hard copy plots and electronic files. The results of the surveys shall be submitted with the Daily Quality Control Report.

3.2.4 Records. A copy of the records of inspections, tests, and surveys, as well as the records of corrective action taken, shall be submitted as directed. The records and reports shall include the following:

(1) Date.

(2) End stations of riprap stone, quarry stone, and cereal stone placed for the last 24 hours.

(3) End stations of riprap stone, quarry stone, and cereal stone placed to date.

3.2.5 Submittal of Reports. Daily reports shall be submitted weekly. Additionally, the Contractor shall send the Reports to seven (7) e-mail addresses that will be provided at the Pre-construction Conference.

3.3 ACCEPTANCE. The riprap stone shore protection, quarry run stone fill, and cereal stone will be accepted using the Typical Sections and cross sections shown based on acceptance survey results. The Government will perform the acceptance surveys or utilize the Contractor Quality Control surveys, at its discretion. Government surveys will control discrepancies. Acceptance sections will include: (1) The full Bird Area; (2) The Neck; (3) The Main Island; (4) The Breakwater; and (5) The Breakwater Option, if directed. The Contractor shall be responsible for maintaining the minimum template for the life of this contract. The Contractor shall be responsible for repair to damages to the stone resulting from construction equipment operation, slides, normal seasonal weather related damage, and the Contractor's negligence.

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SECTION TABLE OF CONTENTS

SITE WORK

SECTION 02484 – SHELL EXCAVATION

SECTION 02484 - SHELL EXCAVATION

PART 1 - GENERAL

1.1 SCOPE OF WORK. The work covered in this Section consists of furnishing plant, labor, and equipment necessary to perform the operations in connection with excavation of shell material at locations shown and dredging of the access and floatation channels. The shell and shell hash shall be installed as cover on the Bird Area and on the inside slopes of the Island. Shell and shell hash shall be utilized to the extent available from excavation of necessary floatation channels. Mining of shell and shell hash is not required if sufficient quantity is available. Priority is to be given to the Bird Area. The Bird Area is defined as specified in the SECTION entitled STONE SHORE PROTECTION.

1.2 TEMPORARY REMOVAL OF AIDS TO NAVIGATION. The temporary removal or changes in locations of Channel markers may be required to facilitate dredging operations. The Contractor shall notify the Contracting Officer at least 21 days prior to the date that the removal or change in location of Channel markers will be required so U.S. Coast Guard can perform the work and to inform navigation interests sufficiently in advance of the proposed removal or change in location.

1.3 ENVIRONMENTAL CONTROL. The Contractor shall comply with the requirements of the SECTION entitled ENVIRONMENTAL PROTECTION.

1.4 ARCHEOLOGICAL SITES AND SHIPWRECKS. If during the dredging and placement operations the Contractor encounters archeological sites or shipwrecks of a historical nature, work shall cease immediately pursuant to the CONTRACT CLAUSE entitled SUSPENSION OF WORK and the Contracting Officer shall be notified by the fastest available means. After investigation by the Contracting officer, the Contractor will be instructed on how to proceed, and if a delay of more than 14 days is incurred or the work is changed, the contract will be modified accordingly.

1.5 CHARACTER OF MATERIALS. Explorations, including probings, to determine the character of materials to be encountered were performed by the Government and are attached as Appendix A at the end of this SECTION. The Contractor is also expected to examine the work site and make a determination as to the character of the materials to be encountered.

1.5.1 Debris. Other materials, including but not limited to, scrap rope, wire cable, snags, piles, and stumps may be encountered within the specified limits of the project. Debris shall not be disposed in open waters in Galveston Bay or at the Redfish Site.

1.6 SUBMITTALS. Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with the SECTION entitled SUBMITTAL PROCEDURES.

1.6.1 SD-01 Data.

1.6.1.1 Contractor Quality Control Plan: GA. The Contractor shall submit a Quality Control Plan prior to construction detailing the requirements specified in the Paragraph CONTRACTOR QUALITY CONTROL, below.

1.6.2 SD-04 Drawings.

1.6.2.1 Equipment Layout: GA. The Contractor shall submit for review, layout drawings of the floating equipment showing access locations and sizes prior to construction.

1.6.3 SD-07 Schedules.

1.6.3.1 Work Plan and Schedule: GA. The Contractor shall submit a work plan and schedule that denotes the equipment, loading and unloading, transportation, placement methods, and sequences used for shell and shell hash placement including access or floatation channel dredging and location(s). The plan and schedule shall be submitted prior to dredging of the floatation and access channels and the schedule shall be updated monthly to reflect the work completed and scheduled work remaining. The Contractor shall not commence work until the plan and schedule have been reviewed, approved, and incorporated into the overall construction and progress schedule.

1.6.3.2 Equipment List: FIO. A list of the major pieces of equipment that are to be used for performing the work shall be submitted prior to mobilization.

1.7 UTILITIES ACROSS THE SITE. Existing utilities are identified and specified in the SECTION entitled STONE SHORE PROTECTION.

1.8 MEASUREMENT.

1.8.1 Shell and Shell Hash necessary to top off the Bird Area shall be measured for payment per cubic yard in-place. Shell and shell hash placed along the inside slope of the Bird Area, Neck, and Main Island shall be measured for payment per linear foot along the adjacent plan crown.

1.8.2 Excavation and Disposal of Material. Access and floatation channel dredging and its related disposal shall not be measured for payment.

1.9 PAYMENT.

1.9.1 Shell and Shell Hash. Payment for spreading excavated shell and shell hash on the Bird Area will be made at the contract unit price per cubic yard for "Shell - Bird Area Crown." Shell and shell hash along the inside slope of the Main Island, Neck, and Bird Area will be made at the contract unit price per linear foot for "Shell - Slope (Sta. 0+89.61 to 27+56.14)," which prices shall include the costs of labor, plant, materials, and equipment required to complete the work specified herein and as shown.

1.9.2 Debris. No separate payment will be made for removal and disposal of debris.

PART 2 - PRODUCTS

2.1 SHELL QUALITY

2.1.1 General. Shell and shell hash shall be obtained from the floatation channels dredged for stone placement. Clay and silt contained in the shell and shell hash dredged shall be washed away by the Contractor during the placement process.

2.1.2 Shell and Shell Hash to be placed on the crown of the Bird Area shall have no more than 10 percent by dry unit weight of mud, clays, and silts. The shell or shell hash to be spread on the inside slopes of the Island or on top of the Main Island shall have no more than 25 percent by dry unit weight of mud, clays, and silts. Mud, clays, and silts will be defined as anything smaller than the U. S. Standard Sieve Size Number 40.

PART 3 - EXECUTION

3.1 ACCESS AND FLOATATION CHANNELS. The access and floatation channels shall be mechanically dredged. The inside top edge of the floatation channel shall be a sufficient distance from the centerline of the newly constructed Island to prevent slides, slumps, or other failures to the stone and shall be a minimum of 20 feet beyond where the toe of the outside layer of stone meets the original Bay bottom. The floatation channel may be on either the northern side or the southern side for the Bird Area along Stations 0+00 to 6+45.50. The floatation channel shall be on the southern side of the Main Island and Breakwater from Stations 6+45.50 to 30+00. From Stations 30+00 to 42+00, the floatation channel may be on either side of the Breakwater. A floatation channel may also be located on the northern side of the Island from Station 6+45.50 to 30+00: however, this channel shall be backfilled with the excavated material to the original Bay bottom elevation.

3.1.1 Material Placement. Excavated material from the access channel shall be placed evenly to either side of the channel. The access channel is defined as that required to reach the site and tie into the floatation channel shown. With the exception of a floatation channel located on the northern side of the Island between Stations 6+45.50 to 30+00, excavated material from the floatation channels shall be

placed on the inside of the channels along the inside toe of the Island or Breakwater slope to be used to create a shell or shell hash beach. After shaping the inside slope of the Bird Area, Neck, and Main Island, the placed shell and shell hash dredged from the floatation channels shall be spread evenly on the slopes of the Quarry Run Stone from the Bay bottom to the crown, where the shell material is available. The recovery limits of the excavated shell and shell hash is from minus 1-foot MLT and above. No mound of excavated materials shall remain at the toe of the Island. In addition, a minimum of 1,200 cubic yards of shell and shell hash shall be stockpiled and placed on top of the Bird Area and spread to a minimum uniform thickness as shown.

3.2 PLACEMENT.

3.2.1 General. Except as otherwise specified, the limits of the shell and shell hash in place shall follow with reasonable variation the indicated lines and grades. Templates shall be placed at adequate intervals, determined by the Contracting Officer to accurately delineate the surfaces of the Island. The work shall be finished smooth.

3.2.2 Construction Load on Island. The Contractor shall exercise extreme care if heavy construction loads are placed on the Island. The Contractor shall repair the damage caused by its activities, direct or indirect, at no cost to the Government.

3.2.3 Tolerances. Shell or shell hash work shall be carried to the lines and grades shown and to the tolerances as specified herein and as directed. Final surfaces of the finished course shall be reasonably even, uniform, and shall follow the indicated lines and grades without continuous under of overbuilding. Layer thickness deviations from the design values for shell or shell hash on the Bird Area crown shall be no less than minus 1- foot and not greater than plus 2 inches. Layer thickness of the shell or shell hash on the inside slopes of the Island shall be no more than plus 2 inches.

3.2.4 Misplaced Material. Material that escapes or is lost while loading, transporting, or placing or that is deposited other than in the area shown or approved in writing shall be removed and redeposited where directed at Contactor's expense.

3.2.5 Misplaced Equipment. If the Contractor, during progress of the work loses, dumps, throws overboard, sinks, or misplaces material, plant, machinery or appurtenances that may be dangerous to or interfere with uses of the Waterway and cause pollution of the waters, the Contracting Officer shall be notified immediately. The Contracting Officer shall be given the description and location of these obstructions and removal by the Contractor will be as directed. If the Contractor refuses, neglects or delays compliance with the above requirements, these obstructions may be removed by the Government and the cost of removal may be deducted from the money due or to become due to the Contractor.

3.3 CONTRACTOR QUALITY CONTROL.

3.3.1 Compliance. The Contractor shall employ hydrographic survey equipment to ensure excavation is confined to within the allowable limits. Upon request of the Government Inspector, the Contractor shall perform surveys as directed and provide

plotted copies in a format and scale that will allow confirmation of compliance with the specified excavation limits.

3.3.2 Surveys. Quality Control Surveys of the shell and shell hash shall be performed by the Contractor. Cross sections shall be taken so that the lines, grades, and thickness of shell and shell hash can be presented and checked. Additional cross sections for shell hash shall be performed at the same locations, as at the stone. The construction surveys shall encompass the previous day's construction to the maximum extent practicable. The results shall be presented in both graphical and digital formats. The digital shall be ASCII X, Y, and Z in the project datum. The graphical format shall consist of cross sections at scales not smaller than 1-inch equals 50 feet horizontal and 1-inch equals 10 feet vertical so that each section can be presented on 8-1/2 by 11-inch paper with representative end areas shown. Cross sections shall be taken at maximum intervals of 50 feet on center with a data density no smaller than one (1) elevation shot every 10 linear feet on line. Additional elevation shots shall be taken at the slope crowns and at abrupt changes in grade. Cross sections shall also be performed perpendicular to the crown along the western end of the Bird Area at the same interval. Cross sections shall also be performed at the cross section locations shown. Temporary bench marks and controls established by the Contractor to perform the surveys shall be verified by Real Time Kinematic Global Positioning Systems on a weekly basis, at a minimum. The cross sections shall extend a minimum of 30 feet beyond the toe of the side opposite the channel, and cover the entire Bird Area crown and up to the edge of the crown along the Neck and Main Island as applicable. The cross sections shall be submitted within 7 calendar days of data collection. Submittal shall include hard copy plots and electronic files. The results of the surveys shall be submitted with the Daily Quality Control Report.

3.3.3 Records. A copy of the following records of inspections, tests, and surveys, as well as the records of corrective action taken, shall be submitted as directed.

(1) Date.

(2) End stations shell and shell hash placed for the last 24 hours.

(3) End stations of shell and shell hash placed to date.

3.3.4 Daily Reports shall be submitted weekly. Additionally, the Contractor shall send the Reports to seven (7) e-mail addresses that will be provided at the Pre-construction Conference.

3.4 ACCEPTANCE. The Government will perform the acceptance surveys or utilize the Contractor Quality Control surveys, at its discretion. Government surveys will control discrepancies. Acceptance sections will include: (1) The full Bird Area; (2) The Neck; and (3) The Main Island. The Contractor shall be responsible for maintaining the minimum template for the life of this contract. The Contractor shall be responsible for repair to damages to the work resulting from construction equipment

operation, settlement, subsidence, slides, displacement and handling of foundation materials, normal seasonal weather related damage, and the Contractor's negligence.

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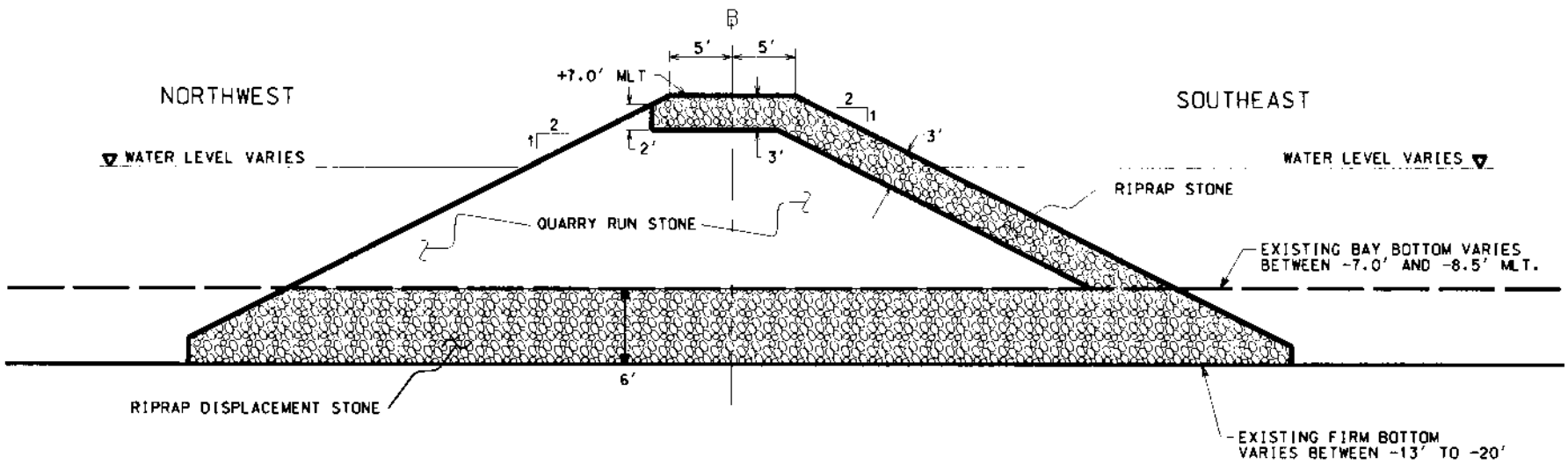
"TO ACCOMPANY AMENDMENT NO. 0001
TO INVITATION NO. DACW64-02-B-0012."



TYP BREAKWATER OPTION SECTION
STATION 37+50.00 TO 40+22.38

SCALE: N.T.S.

NOTES:

1. BOTTOM LAYER OF RIPRAP DISPLACEMENT STONE TO BE 6' THICK. BOTTOM ELEVATION OF LAYER TO BE DETERMINED IN FIELD AS DEPTH THAT RIPRAP DISPLACES EXISTING MATERIAL.
2. BOTTOM OF QUARRY RUN STONE TO BE TOP OF 6' THICK LAYER OF RIPRAP DISPLACEMENT STONE.

TO BE ADDED TO DRAWING NO.C-12.

FIGURE 1